Multivariate Descriptive Statistics

```
# Loading the dataset into a dataframe
df <- read_delim("../../data/processed/wines.csv",
  ";",
  escape_double = FALSE,
  trim_ws = TRUE)
```

Analysis of the dataset

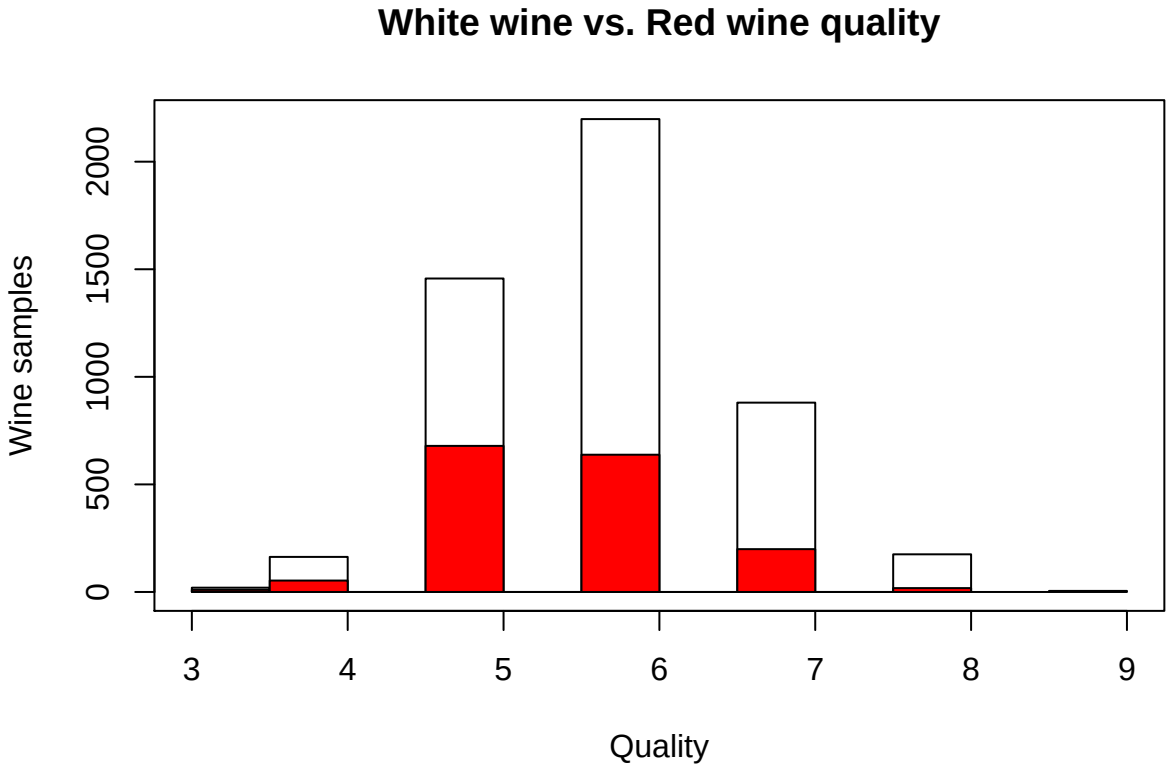
Quantitative attributes

```
##  fixed_acidity    volatile_acidity   citic_acid     residual_sugar
##  Min.   : 3.800   Min.   :0.0800   Min.   :0.0000   Min.   : 0.600
##  1st Qu.: 6.400   1st Qu.:0.2300   1st Qu.:0.2500   1st Qu.: 1.800
##  Median : 7.000   Median :0.2900   Median :0.3100   Median : 3.000
##  Mean   : 7.215   Mean   :0.3396   Mean   :0.3187   Mean   : 5.444
##  3rd Qu.: 7.700   3rd Qu.:0.4000   3rd Qu.:0.3900   3rd Qu.: 8.100
##  Max.   :15.900   Max.   :1.5800   Max.   :1.6600   Max.   :65.800
##    chlorides       free_sulfur_dioxide total_sulfur_dioxide
##  Min.   :0.00900   Min.   :  1.00      Min.   :  6.0
##  1st Qu.:0.03800   1st Qu.: 17.00      1st Qu.: 77.0
##  Median :0.04700   Median : 29.00      Median :118.0
##  Mean   :0.05602   Mean   : 30.52      Mean   :115.8
##  3rd Qu.:0.06500   3rd Qu.: 41.00      3rd Qu.:156.0
##  Max.   :0.61100   Max.   :289.00      Max.   :440.0
##     density             pH          sulphates         alcohol
##  Min.   :0.9871   Min.   :2.720   Min.   :0.2200   Min.   : 8.00
##  1st Qu.:0.9923   1st Qu.:3.110   1st Qu.:0.4300   1st Qu.: 9.50
##  Median :0.9949   Median :3.210   Median :0.5100   Median :10.30
##  Mean   :0.9947   Mean   :3.219   Mean   :0.5313   Mean   :10.49
##  3rd Qu.:0.9970   3rd Qu.:3.320   3rd Qu.:0.6000   3rd Qu.:11.30
##  Max.   :1.0390   Max.   :4.010   Max.   :2.0000   Max.   :14.90
##     quality           type
##  Min.   :3.000   Min.   :0.0000
##  1st Qu.:5.000   1st Qu.:0.0000
##  Median :6.000   Median :0.0000
##  Mean   :5.819   Mean   :0.2459
##  3rd Qu.:6.000   3rd Qu.:0.0000
##  Max.   :9.000   Max.   :1.0000
```

Table 1: Analysis of the attributes.

	min	max	mean	SD
fixed_acidity	3,800	15,900	7,215	1.296588
volatile_acidity	0,0800	1,5800	0,3396	0.164583
citric_acid	0,0	1,6600	0,3187	0.1452326
residual_sugar	0,600	65,800	5,444	4.758494
chlorides	0,00900	0,61100	0,05602	0.03503299
free_sulfur_dioxide	1,00	289,00	30,52	17.74849
total_sulfur_dioxide	6,0	440,0	115,8	56.52657
density	0,9871	1,0390	0,9947	0.002999095
pH	2,720	4,010	3,219	0.1608116
sulphates	0,2200	2,00	0,5313	0.148822
alcohol	8,00	14,90	10,49	1.192768

Quality histogram



Correlation analysis

Análisis de `correlations` (function corrplot.mixed with first argument r) y `partial correlations` (function corrplot.mixed with first argument partial.corr).

Coefficients of determination

Para las variables numéricas (no categóricas):s Interesante también calcular los `coefficients of determination` de cada variable (function r2multv) y la `effective dependence coefficient of the R`

`matrix` (function 1-det(cor(ds[,c(1,5,7,8,9,10)]))^(1/6)) El 6 de 1/6 es el número de atributos.